Class : 11

Register Number

FIRST REVISION EXAMINATION - JANUARY - 2024
COMPUTER SCIENCE

Time Allowed : 3.00 Hours]   [Max. Marks : 70

Instructions : (1) Check the question paper for fairness of printing. If there is any lack of fairness, inform the Hall Supervisor immediately.

(2) Use Blue or Black ink to write and underline and pencil to draw diagrams.

PART - I

Note : i) Answer All the questions.   15X1 = 15
ii) Choose the most appropriate answer from the given four alternatives and write the the corresponding answer.

1. Expand POST
   a) Post on Self Test   b) Power on Software Test
   c) Power on Self Test   d) Power on Self Text

2. What is the 1's complement of 00100110?
   a) 00100110   b) 11011001   c) 11010001   d) 00101001

3. File management manages.
   a) Files   b) Folders   c) Directory Systems   d) All the above

4. What is the smallest size of data represented in a CD?
   a) Blocks   b) Sectors   c) Pits   d) Tracks

5. The shortcut key used to rename a file in windows.
   a) F2   b) F4   c) F5   d) F6

6. Stating the input property and the input output relation a problem is known
   a) Specification   b) Statement   c) Algorithm   d) Definition

7. The smallest individual unit in a program is
   a) Program   b) Algorithm   c) Flowchart   d) Tokens

8. What is output of the following Snippet?
   Char ch = 'A' ;
   Ch = ch + 1 ;
   a) B   b) A1   c) F   d) 1A

9. How many times the following loop will executes? for (int i = 0 ' i < 10 ; i + +)
   a) 0   b) 10   c) 9   d) 11

10. Which function begins the program execution?
    a) isdigit   b) main   c) Header   d) islower

11. Structure definition is terminated by
    a) :   b) }   c) ;   d) : :

12. Which of the following access specifier protects data from inadvertent modifications?
    a) Private   b) Protected   c) Public   d) Global

13. The type of Inheritance that reflects the transitive nature is
    a) Single Inheritance   b) Multiple Inheritance
    c) Multi level Inheritance   d) Hybrid Inheritance

14. E - Commerce means
    a) Electronic Commerce   b) Electronic Data exchange
    c) Electric Data exchange   d) Electronic Commercialization

15. Which of the following supports the transitive nature of data?
    a) Inheritance   b) Encapsulation   c) Polymorphism   d) Abstraction

PART – II

II. Answer any six questions. Question No. 24 is compulsory.   6x2=12

16. What is the Function of an ALU?
17. What is HDMI?
18. What is a GUI?
19. What is Abstraction?
20. What are Keywords? Give an example.
21. Write about Strlen ( ) Function.
22. List the Operators that cannot be overloaded.
23. What is a Cookie?
24. What is the output of the following Code?
    for (int i = 2 ;   i < = 10 ; i + = 2)
    Cout < < i ;

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PART – III

III. **Answer any six questions. Question No. 33 is compulsory.**   6 × 3 = 18

25. What are the Characteristics of a Computer?
26. Reason out why the NAND and NOR are called Universal Gate?
27. Differentiate PROM and EPROM.
28. Write a note on Recycle Bin.
29. What is the use of a Header File?
30. Write about Strcmp ( ) Function.
31. What are the points to be noted while deriving a new class?
32. Write a note on the features of Procedural Programming.
33. Convert the following if - else to a Single Conditional Statement :

```
if (x > = 10)
     a = m + 5 ;
else a = m ;
```

PART – IV

IV. **Answer all the questions.**   5 × 5 = 25

34. (a) Explain the basic Components of a Computer with a neat diagram.
(OR)
   (b) Arrange the memory devices in ascending order based on the access time.

35. (a) Explain the process management Algorithm in Operating System.
(OR)
   (b) Write the procedure to create shortcut in Windows OS.

36. (a) Write about Binary Operators used in C++.
(OR)
   (b) Mention the differences between Constructor and Destructor.

37. (a) What is an entry Control loop? Explain any one of the entry controlled loop with suitable example
(OR)
   (b) What are the rules for Operator Overloading

38. (a) Write the output of the following

```
#include < io stream >
    Using namespace std ;
    Class Student .
{
int mo, marks ;
public :
    Student (int r, int m)
{
    Cout < < " Constructor ' < < end l;
    mo = r ;
    marks = m ;
    }
    Void print det ( )
    {
       marks = marks + 30 ;
       Cout < < " Name : Bharathi" < < end l ;
       Cout < < " Roll no : " < < rno < < " n" ;
       Cout < < "Marks :" < < marks < < end l
    }
} ;
int  main ()
{
    Student S (14, 70) ;
    S. print det ( ) ;
    Cout < < " Back to Main" ;
    return 0 ;
}
```

(OR)
   (b) Write a note on the basic concepts that supports OOPS?

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MOUNT CARMEL MISSION MATRICULATION HIGHER SECONDARY SCHOOL
MOUNT ROAD, CARMEL NAGAR, KALLAKURICHI – 606 202
FIRST REVISION EXAMINATION – JANUARY – 2024 – [ANSWER KEY]

CLASS: XI   **MARKS: 70**
SUB: COMPUTER SCIENCE   **TIME: 3 : 00 Hrs**

PART – I

I. CHOOSE THE CORRECT ANSWER: **15 X 1 = 15**

1. c) Power on Self Test
2. b) 11011001
3. d) All the above
4. c) Pits
5. a) F2
6. a) Specification
7. d) Tokens
8. a) B
9. b) 10
10. b) main
11. c) ;
12. a) Private
13. c) Multi level Inheritance
14. a) Electronic Commerce
15. a) Inheritance

PART – II

**II. ANSWER ANY SIX QUESTIONS. Q.No: 24 IS COMPULSORY:**   **6 X 2 = 12**

16. What is the Function of an ALU?

Ans: The ALU is a part of the CPU where various computing functions are performed on data. The ALU performs arithmetic operations such as addition, subtraction, multiplication, division and logical operations. The result of an operation is stored in internal memory of CPU. The logical operations of ALU promote the decision-making ability of a computer.

17. What is HDMI?

Ans: High Definition Multimedia Interface (HDMI). High-Definition Multimedia Interface is an audio/ video interface which transfers the uncompressed video and audio data from a video controller, to a compatible computer monitor, LCD projector, digital television etc.

Micro HDMI   HDMI
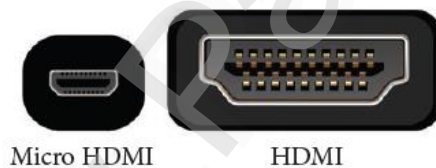
18. What is GUI?

Ans: The GUI is a window based system with a pointing device to direct I/O, choose from menus, make selections and a keyboard to enter text. Its vibrant colours attract the user very easily.

19. What is Abstraction?

Ans: Abstraction is the process of ignoring or hiding irrelevant details and modeling a problem only by its essential features.
Example:
A map is an abstraction of the things we find on the ground.

20. What are keywords? Give an example.

Ans: Keywords are the reserved words. Keywords are the essential elements to construct programs. Most of the keywords are common to C, C++ and Java. Keywords cannot be used as identifiers.
Example:
int, char, float, if etc.,

21. Write about strlen( ) Function.

Ans: strlen( )

> **Purpose:** To find the length of a string
>
> **General form:** strlen(string)
>
> The strlen( ) takes a null terminated byte string source as its arguments and returns its length. The length does not include the null (\0) character.
>
> **Header file:** <string.h>
>
> **Example:** char name[ ] = "RICHARD";
>
> > cout<<"\n Length of name:"<<strlen(name);
>
> **Output:**
>
> > Length of name = 7

22. List the Operators that cannot be overloaded.

Ans: Operators that cannot be overloaded are

> i. Scope operator (: :)
>
> ii. Sizeof( )
>
> iii. Member selector (.)
>
> iv. Member pointer selector (*)
>
> v. Ternary operator (?:)

23. What is a Cookie?

Ans: A cookie is a small piece of data sent from a website and stored on the user's computer memory (Hard drive) by the user's web browser while the user is browsing internet. Cookies were designed to be a reliable mechanism for websites to remember key information.

24. What is the output of the following Code?

for (int i = 2; i < = 10; i + = 2)

cout<<i;

Ans:

> 2 4 6 8 10

PART – III

III. ANSWER ANY SIX QUESTIONS. Q.No: 33 IS COMPULSORY: **6 X 3 = 18**

25. What are the characteristics of a computer?

Ans: i. High Speed

> ii. Stores Huge data
>
> iii. A computer can be programmed
>
> iv. A computer can be connected to different input and output devices
>
> v. A computer can be connected in a network or to internet.

26. Reason out why the NAND and NOR are called universal gates?

Ans: NAND and NOR gates are called Universal gates, because the fundamental logic gates AND, OR and NOT can be realized through them.
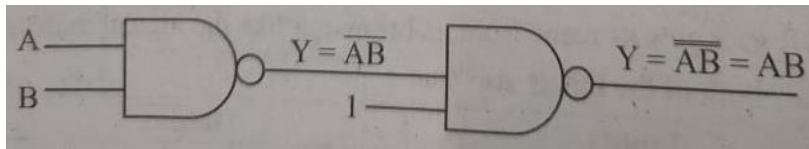
> We can realize AND, OR and NOT using only NAND gates.
>
> Also we can realize AND, OR and NOT using only NOR gates.
>
> **Example:**
>
> i. Realisation of NOT gate using NAND
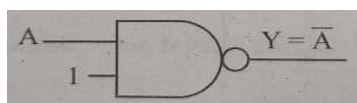
ii. Realisation of AND using only NANDS

27. Differentiate PROM and EPROM.

Ans:

PROM	EPROM
PROM stands for Programmable Read Only Memory	EPROM stands for Erasable Programmable Read Only Memory
Contents of PROM cannot be erased or edited.	Contents of EPROM can be erased by exposing to ultraviolet rays.
PROM is programmed only once.	EPROM can be reprogrammed after erasing the contents.

28. Write a note on Recycle Bin.

Ans: - Recycle bin is a special folder to keep the files or folders deleted by the user.
- The user cannot access the files or folders available in the Recycle bin without restoring it.
- **To restore file or folder or Empty Recycle bin:**
  - Open Recycle bin (Double click or Recycle bin Icon)
  - Right click on a file or folder to be restored and select 'Restore' option from the pop-up menu.
  - To restore multiple files or folders, select 'Restore All' items.
  - To delete all files in the Recycle bin: Select **'Empty the Recycle Bin"**.

29. What is the use of a header file?

Ans: To use the member objects of a header file, we have to include the header file in the program.
For example: cin and cout are the member function of the header file <iostream.h>. So, to use cout and cin in a program, we must include the header file <iostream.h>.
The statement #include<iostream.h> will include the header file <iostream.h>
Examples of header files: <iostream.h>, <conio.h>, <string.h> etc.,

30. Write about Strcmp( ) Function.

Ans: strcmp( )
  Purpose: To compare two strings
  General form: strcmp(string1, string2)
  The strcmp( ) function takes two arguments: string1 and string2. It compares the contents of string1 and string2 lexicograpically and returns

  Positive value(1)   : if the first differing character in string1 is greater than the corresponding character in string2. (ASCII values are compared)
  Negative value(-1)   : if the first differing character in string1 is less than the corresponding character in string2.
  Zero(0)   : if string1 and string2 are equal.
  Examples:

| char str1[ ] = "Hello"; char str2[ ] = "HELLO"; cout<<strcmp(str1,str2); **OUTPUT:** 1 | char str1[ ] = "HELLO"; char str2[ ] = "Hello"; cout<<strcmp(str1,str2); **OUTPUT:** -1 | char str1[ ] = "HELLO"; char str2[ ] = "HELLO"; cout<<strcmp(str1,str2); **OUTPUT:** 0 |

31. What are the points to be noted while deriving a new class?

Ans: - While defining a derived class, the derived class should identify the class from which it is derived. The following points should be observed for defining the derived class.

  i. The keyword class has to be used

  ii. The name of the derived class is to be given after the keyword class

  iii. A single colon

  iv. The type of derivation (the visibility mode), namely private, public or protected. If no visibility mode is specified, then by default the visibility mode is considered as private.

  v. The name of the base class (parent class), if more than one base class, then it can be given separated by comma.

  vi. **Syntax:**

    class derived_class_name : visibility_mode base_class_name

    {

    // members of derivedclass

    }

  vii. **Example:**

    class base   { public: int x; };

    class derived: public base { };

32. Write a note on the features of Procedural programming.

Ans: - Programs are organized in the form of subroutines or sub programs.

  - All data items are global.

  - Suitable for small sized software application.

  - **Example:** FORTRAN and COBOL.

  - Difficult to maintain and enhance program code.

33. Convert the following if – else to a Single Conditional Statement:

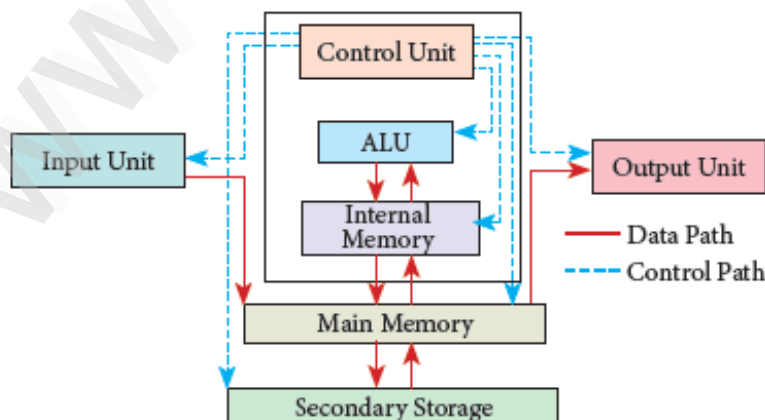**if (x > = 10)**

  a = m + 5;

  else

  a = m;

Ans:

  a = (x > = 10) ? m + 5 : m;

PART – IV

IV. ANSWER ALL THE QUESTIONS: 5 X 5 = 25

  34. a) Explain the basic Components of a Computer with a neat diagram.

  Ans:

Input Unit: Feeds data or information to the computer. **E.g:** Keyboard, Mouse etc.,

Output Unit: Conveys information to one or more people in user in an understandable form. **E.g:** Monitor, Printer etc.,

Memory Unit: The Memory Stores everything that computer works with. The memory is of two types which are primary memory and secondary memory. The primary memory is used to temporarily store the programs and data when the instructions are ready to execute. The secondary memory is used to permanently store the data.

CPU: CPU is the major components which interprets and executes software instructions. It also control the operation of all other components such as memory, input and output units. It accepts binary data as input, process the data according to the instructions and provides the result as output.

The CPU has three components which are Control unit, Arithmetic and logic unit (ALU) and Memory unit.

Arithmetic and Logic Unit: The ALU performs the various computing functions on data. The ALU performs arithmetic operations such as addition, subtraction, multiplication, division and logical operations. The result of an operation is stored in internal memory of CPU. The logical operations of ALU promote the decision-making ability of a computer.

Control Unit: The control unit controls the flow of data between the CPU, memory and I/O devices. It also controls the entire operation of a computer.

[OR]

b) Arrange the memory devices in ascending order based on the access time.

   Ans: Access Time (Response time) refers to how quickly the memory can respond to a read / write request.

   The diagram shows different memory devices arranged according to access time.
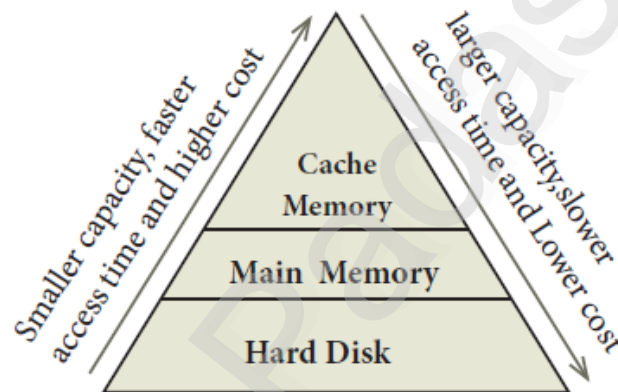
Memory Heirarchy

i. **Cache Memory:**

   - Extremely fast memory (Faster than main memory).
   - Fast response time (Access time).
   - Used to store frequently used data by the CPU.

Cache Memory Arrangement

ii. **Main memory:**
- The main memory is otherwise called as Random Access Memory.
- Stores currently used Operating System files, Application Programs and the data.
- Computer's processor can access the main memory directly.

iii. **Hard disk:**
- Hard disk is a magnetic disk on which you can store data.
- Stores data and programs permanently.
- Non-volatile memory.

35. a) Explain the process management Algorithm in Operating System.

Ans: Process management is function that includes creating and deleting processes (program) and providing mechanisms for processes to communicate and synchronize with each other.

Example: A system task of sending output to a printer.

Process management algortihms:

The following algorithms are mainly used to allocate the job (process) to the processor.

   i. FIFO   ii. SJF   iii. Round Robin   iv. Based on Priority

i. **FIFO (First In First Out) Scheduling:** This algorithm is based on queuing technique. Technically, the process that enters the queue first is executed first by the CPU, followed by the next and so on. The processes are executed in the order of the queue.

ii. **SJF (Shortest Job First) Scheduling:** This algorithm works based on the size of the job being executed by the CPU.

  Example: Suppose, Job A = 6 KB and Job B = 9 KB, then

  First the job "A" will be assigned and then job "B" will get its turn.

iii. **Round Robin Scheduling:** The Round Robin (RR) scheduling algorithm is designed especially for time sharing systems. Jobs (processes) are assigned and processor time in a circular method.

  Example: Suppose there are three jobs A, B, C. First the job A is assigned to CPU then job B and job C and then again A, B and C and so on.

iv. **Based on Priority:** The given job (process) is assigned based on a Priority. The job which has higher priority is more important than other jobs.

Example: Suppose there are two jobs,

Job A $\longrightarrow$ Priority = 5

Job B $\longrightarrow$ Priority = 7, then

Job B is assigned to the processor before job A.

        [OR]

b) Write the procedure to create shortcut in Windows OS.

  Ans: Creating Shortcuts on the Desktop:

  Shortcuts to most often used folders and files may be created and placed on the Desktop to help automate your work.

- Select the file or folder that you wish to have as a shortcut on the Desktop.
- **Right click** on the file or folder.
- Select **Send** to from the shortcut menu, then select **Desktop (create shortcut)** from the sub-menu.
- A shortcut for the file or folder will now appear on desktop and we can open it from the desktop in the same way as any other icon.

36. a) Write about Binary operators used in C++.

Ans: - Binary operators require two operands.

- Binary operators are grouped as

      i. Arithmetic operators

      ii. Relational operators

      iii. Logical operator

      iv. Assignment operator

      v. Conditional operator (Ternary operator)

i. **Arithmetic Operators:** - Arithmetic operators perform simple arithmetic operations like addition, subtraction, multiplication, division etc.

- Arithmetic operators are binary operators which requires minimum of two operands.

Example:

Operator	Operation	Example
+	Addition	12 + 4 = 16
-	Subtraction	12 – 4 = 8
*	Multiplication	12 * 4 = 48
/	Division	12 / 4 = 3
%	Modulus (Gives out remainder of division)	12 % 2 = 0

ii. **Relational Operators:** - Relational operators are used to determine the relationship between its operands. When the relational operators are applied on two operands, the result will be a Boolean value i.e., 1 or 0 to represents True or False respectively. C++ provides 6 relational operators.

Example:

Operator	Operation	Example
<	Less than	12 < 4 is FALSE
< =	Less than or equal to	12 < = is TRUE
>	Greater than	12 > 4 is TRUE
> =	Greater than or equal to	12 > = 12 is TRUE
= =	Equal to	12 = = 4 is FALSE
! =	Not equal to	12 ! = 4 is TRUE

iii. **Logical operators:** A logical operator is used to evaluate logical and relational expressions. The logical act upon the operands that are themselves called as logical expressions. C++ provides 3 logical operators.

Example:

Operator	Operation	Description	Example
&&	AND	The logical AND combines two different relational expressions into one. Both expressions are TRUE returns TRUE, otherwise returns FALSE	(80 > 35) && (70 > 35) will return TRUE
||	OR	The logical OR combines two different	(80 > 35) || (70 > 35) will

		relational expressions in to one. Any one expressions is TRUE returns TRUE otherwise returns FALSE.	return TRUE
!	NOT	NOT works on a single expression / operand. Expression is TRUE returns FALSE. Expression is FALSE returns TRUE	! (80 > 35) will return FALSE

iv. **Assignment Operator:** Assignment operator is used to assign a value to a variable which is on the left hand side of an assignment statement. = (equal to) is commonly used as the assignment operator in all computer programming languages. This operator copies the value at the right side of the operator to the left side variable. It is also a binary operator.

Example:

Operator	Name of the Operator	Example
=	Assignment	a = 5; b = a + 2; // b will be 7
+ =	Addition assignment	a = 5; a+ = 2; // a will be 7
- =	Subtraction assignment	a = 5; a- = 2; // a will be 3
* =	Multiplication assignment	a = 5; a * = 2; // a will be 10
/ =	Division assignment	a = 6; a / = 2; // a will be 3
% =	Modulus assignment	a = 5; a % = 2; // a will be 1

v. **Conditional Operator (Ternary Operator):** In C++, there is only one conditional operator. **? :** is a conditional operator which is also known as Ternary operator. This operator is used as an alternate to if. . . else control statement.

Example:

Operator	Name of the Operator	Example
? :	Conditional operator	largest = (a > b)? a : b;

[OR]

b) Mention the difference between constructor and destructor.

Ans:

| CONSTRUCTOR	DESTRUCTOR
Constructor is invoked automatically when an instance of a class comes into space.	Destructor is invoked automatically when an instance of a class object goes out of scope.
The name of the constructor must be same as that of the class.	The name of the destructor must be same as that of the class prefixed by ~ (tilde character).
Constructor can be overloaded.	Destructor cannot be overloaded.
Constructor can have parameter list.	Destructor cannot have parameter list.
Constructor allocates memory for the objects.	Destructor clears the memory allocated to objects by compiler.
Constructors are executed in the order of inheritance.	Destructors are executed in the reverse oreder of inheritance.

37. a) What is an entry control loop? Explain any one of the entry controlled loop with suitable example.

Ans: In an entry control loop, the test-expression is evaluated before the entering into a loop.

Examples: 1. while loop   2. for loop

while loop:

Purpose: A while loop is a conditional flow statement that allows the loop statements to be executed as long as the condition is true.

Type: Entry control loop

Syntax:

```
while ( Test expression )
{
        Body of the loop;
}
Statement-x;
```

Flow chart representation:
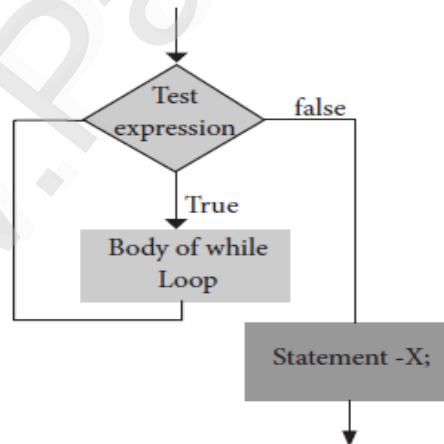
Workflow:

Step 1: Test-expression is evaluated to either True or False.

Step 2: If test-expression is True

    a) The body of the loop is executed.

    b) Control is transferred to step1.

Step 3: If test-expression is False, the control exits the while loop.

Example:
```
#include<iostream>
using namespace std;
int main( )
{
  int a = 2;
  while (a < = 10 )
{
  cout<<a<<'\t';
  a+ = 2;
}
```
Output:
2   4   6   8   10
          [OR]
b) What are the rules for operator overloading?
Ans:
- Precedence and Associatively of an operator cannot be changed.
- No new operators can be created, only existing operators can be overloaded.
- Cannot redefine the meaning of an operator's procedure. Only additional functions can be given to an operator.
- Overloaded operators cannot have default arguments.
- When binary operators are overloaded, the left hand object must be an object of the relevant class.

38. a) Write the output of the following

```cpp
#include<iostream>
using namespace std;
class student
{
  int rno, marks;
  public: student(int r, int m)
  {
    cout << "Constructor " << endl;
    rno = r;
    marks = m;
  }
  void printdet()
  {
    marks = marks + 30;
    cout << "Name: Bharathi" << endl:
    cout << "Roll no : "<<rno << "\n";
    cout << "Marks : "<<marks << endl;
  }
};
int main()
{
  student s(14,70);
  s.printdet();
  cout << "Back to Main";
  return 0;
}
```

SOLUTION

```
Constructor
Name: Bharathi
Roll no : 14
Marks : 100
Back to Main
```

b) **Write a note on the basic concepts that supports OOPs?**

   Ans:

   - **Encapsulation:** The mechanism by which the data and functions are bound together into a single unit is known as Encapsulation. It implements abstraction.
   - **Data Abstraction:** Abstraction refers to showing only the essential features without revealing background details.
   - **Modularity:** Modularity is designing a system that is divided into a set of functional units (named modules) that can be composed into a larger application.
   - **Inheritance:** Inheritance is the technique of building new classes (derived class) from an existing class (base class). The most important advantage of inheritance is code reusability.
   - **Polymorphism:** Polymorphism is the ability of a message or function to be displayed in more than one form.

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